

## DEEP CREEK UNIT APPLICATION

### FINDINGS AND DECISION

of the Director, Division of Oil and Gas

Under Delegation of Authority from the  
Commissioner, Department of Natural Resources, State of Alaska

December 30, 2001

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## I. INTRODUCTION AND BACKGROUND

Union Oil Company of California (Unocal), the only working interest owner and the designated unit operator, filed the Deep Creek Unit Application (Application) with the State of Alaska, Department of Natural Resources, Division of Oil and Gas (State, DNR or Division, as appropriate), and Cook Inlet Region, Incorporated (CIRI). The proposed Deep Creek Unit, located on the Kenai Peninsula, includes uplands that parallel the Cook Inlet coastline approximately five miles inland from the nearest communities of Ninilchik and Happy Valley. The proposed unit area encompasses approximately 22,216.91 acres within eight individual oil and gas leases. Approximately 9,146.47 acres or 40.44% of the proposed unit area lies within three State oil and gas leases, and 13,470.44 acres or 59.56% lies within five oil and gas leases issued by CIRI. Unocal requests that the State and CIRI jointly administer the proposed Deep Creek Unit Agreement (Agreement). If approved, the Agreement will conform and modify all eight oil and gas leases within the unit area so that the unit operator can explore and develop on a unit-wide basis instead of on a lease-by-lease basis.

A summary of the leases proposed for commitment to the Deep Creek Unit (DCU) follows. DNR issued oil and gas lease ADL 384380 (DCU Tract 2) following Cook Inlet Sale 78 held on October 31, 1994, on State lease form DOG 9208. With an effective date of January 1, 1995, the seven-year primary term of ADL 384380 expires on December 31, 2001. On April 21, 1999, DNR held the Cook Inlet Areawide 1999 lease sale, and issued oil and gas leases ADL 389225 (DCU Tract 7) and ADL 389226 (DCU Tract 6), on State lease form DOG 9609 (Revised 9/99). Effective February 1, 2000, the seven-year primary terms of these two leases expire on January 31, 2007. All three of these lease contracts retain a 12.5% royalty to the State.

The CIRI leases proposed for inclusion in the Deep Creek Unit are: C-061587 (Tract 1), C-061588 (Tract 3), C-01589 (Tract 4), C-01590 (Tract 5), and C-01591 (Tract 8). The primary terms of the all five of these leases expire on December 17, 2003, and they each retain an 18% royalty to CIRI.

Approval of the Agreement by the State and CIRI will conform and modify all eight lease contracts to be consistent with the Agreement, and extend the lease terms for as long as they are subject to the Agreement.

## II. APPLICATION FOR THE FORMATION OF THE DEEP CREEK UNIT

Unocal submitted the Application on November 7, 2001, and paid the \$5,000.00 unit application filing fee, in accordance with 11 AAC 83.306 and 11 AAC 05.010(a)(10)(D). The Application includes: the Agreement; Exhibit A legally describing the proposed unit area, its leases, and ownership interests; Exhibit B, a map of the proposed unit; and the proposed Initial Plan of Exploration for the Deep Creek Unit (Initial POE). The Application also included the Deep Creek Unit Operating Agreement; technical data supporting the Application; and an affidavit that all proper parties were invited to join the Agreement.

Unocal based the Agreement on the State's Multiple Royalty Owner model form, dated February 2000 (Model Form). Unocal, the Division and CIRI proposed various amendments to the Model Form. The Application included a detailed list of the proposed changes to the Model Form. The following is a summary of the substantive changes to the Model Form that Unocal incorporated in the Agreement. Unocal added definitions and made changes throughout the Agreement to provide for joint administration by the State and CIRI. The Agreement also includes modifications to the Model Form that the State requested to incorporate provisions in the recently revised State Only Royalty Owner Unit Agreement and State regulations. At the request of the State, Unocal included an offset well provision as Article 10 of the Agreement. Unocal added Article 12, CIRI Leases, Rentals and Royalty Interest Payments, at CIRI's request. The requested modifications to the Model Form are reasonably necessary or required for the Agreement to protect the State's interest. 11 AAC 83.326.

Unocal requested that only a portion of ADL 384380, approximately half of a non-contiguous State lease, be committed to the Deep Creek Unit. Commitment of a portion of ADL 384380 constitutes severance of the lease and the non-unitized portion will be treated as a separate and distinct lease having the same effective date and term as the original lease and may be maintained thereafter only in accordance with the terms and conditions of the original lease, statutes, and regulations. 11 AAC 83.373.

The Agreement defines the relationship between the unit operator, the working interest owners, and the royalty owners. It describes the rights and responsibilities, in addition to those imposed by state law and the leases, of the unit operator, working interest owners, and royalty owners for exploration and development of the unit area. DNR may approve the Agreement if the available data suggest that the unit area covers all or part of one or more oil or gas reservoirs, or all or part of one or more potential hydrocarbon accumulations that should be developed under an approved unit plan, and the Application meets the other statutory and regulatory criteria.

The Agreement requires that the unit operator, Unocal, file unit plans describing the activities planned for the proposed unit area. Unocal must consider how it can best explore and develop the resources underlying the entire unit area, without regard to internal lease boundaries. Unocal filed a proposed two-year Initial POE as a Unit Plan of Exploration required under 11 AAC 83.341. Unocal commits to drill an exploratory well in the first year of the Initial POE, and to acquire new seismic data within the unit area during the second year. A detailed discussion of the Initial POE is in Section III. 4. of this Finding and Decision.

The Division determined that the Application was complete and published notices in the "*Anchorage Daily News*" and in the "*Peninsula Clarion*" on Sunday, November 11, 2001. DNR also posted a notice on the State's online public notice web page. The Division provided copies of the public notice to the Kenai Peninsula Borough (KPB), the City of Homer, the Ninilchik Chamber of Commerce, the Ninilchik Traditional Council, the Ninilchik Native Association, the Salamatoff Native Association, CIRI, and other interested parties in compliance with 11 AAC 83.311. The Division also provided public notice to the Alaska Department of Environmental Conservation (DEC), the Alaska Department of Fish and Game (ADF&G), and to post offices, libraries, and radio stations in the area.. The notices invited interested parties and members of

the public to submit comments by December 12, 2001. The Division received no comments on the Application in response to the public notices.

On November 15, 2001, the Division requested additional technical data in support of the Application. Unocal submitted additional geological and geophysical data on November 30, 2001, in response to the Division's request.

### III. DISCUSSION OF DECISION CRITERIA

AS 38.05.180(p) gives DNR the authority to form an oil and gas unit. The Commissioner of DNR (Commissioner) reviews unit applications under AS 38.05.180(p) and 11 AAC 83.301 – 11 AAC 83.395. By memorandum dated September 30, 1999, the Commissioner approved a revision of Department Order 003, and delegated this authority to the Division Director (Director).

The Director will approve the Application upon finding that it will: 1) promote the conservation of all natural resources; 2) promote the prevention of economic and physical waste; and 3) provide for the protection of all parties of interest, including the State in accordance with 11 AAC 83.303(a). Subsection (b) sets out six factors that the Director will consider in evaluating the Application. A discussion of the subsection .303(b) criteria, as they apply to the Agreement, is set out directly below, followed by the Director's findings relevant to the subsection (a) criteria, and the Director's conditional approval of the Application.

#### 1. The Environmental Costs and Benefits of Unitized Exploration or Development

DNR considered environmental issues in the lease sale process, and the State leases contain mitigation measures designed to reduce the environmental impacts of exploration and development of the leased area. The proposed Deep Creek Unit area is habitat for a variety of mammals, waterfowl, and fish. Area residents may use this area for subsistence hunting and fishing. Oil and gas activity in the proposed unit area may affect some wildlife habitat. Mitigation measures include seasonal restrictions on specific activities to reduce the impact on fish, wildlife, and human populations. Mitigation measures specifically address potential impacts to subsistence access and harvesting.

The proposed Deep Creek Unit includes leases from two State lease sales held almost five years apart, and leases issued by CIRI, all with different environmental protection provisions. Article 8.2 of the Agreement requires that a Unit Plan of Operations must be consistent with the leases, mitigation measures, and lessee advisories developed by DNR for the State's most recent Cook Inlet areawide lease sale. (See Attachment 4) With approval of the Application, future exploration and development within the Deep Creek Unit will be subject to this provision, if proposed operations involve State surface or subsurface. When the unit operator submits a Unit Plan of Operations for approval, the Division will apply the current mitigation measures developed during the leasing process uniformly across the unit, ensuring environmental protections that might not otherwise occur on private lands. However, for operations solely on CIRI lands, the Division will not have the authority to approve a plan of operations or impose the

State's mitigation measures. Unitization does not waive or reduce the effectiveness of the mitigating measures that condition the lessee's right to conduct operations on these leases.

However, the proposed Deep Creek Unit is within the Alaska Coastal Zone, and therefore it is subject to the Alaska Coastal Management Program (ACMP), whether the activity is on State or CIRI land. The appropriate federal, State and local agencies must determine if the operators exploration or development plan is consistent with ACMP, and the lessees may not commence drilling or development operations until all agencies have granted the required permits.

On March 8, 2001, Unocal submitted a Coastal Project Questionnaire, permit applications, and supporting information for the Deep Creek Oil and Gas Exploration Project (Deep Creek Project) to the Alaska Division of Governmental Coordination (DGC), which initiated an intensive public and agency review process in compliance with ACMP. Unocal's Deep Creek Project included plans to drill two wells, the NNA #1 and NNA #2, both within the unit area proposed in the subject Application. DGC determined which permits were required and organized an inter-agency review of the project by the State resource agencies (DNR, DEC, ADF&G), federal resource agencies (EPA, Corps of Engineers), affected local governments, and the public. DGC published a notice soliciting comments from federal, State and local agencies, and the public, which started a 50-day review schedule. DGC asked the public and the government agencies to review the Deep Creek Project, request any additional information needed to determine if the project was consistent with ACMP, and submit comments to DGC. Review of the Deep Creek Project followed the standard ACMP process.

After reviewing all comments, DGC may impose conditions on the proposed activity or require additional mitigation measures, as necessary, to ensure that the project is consistent with the ACMP and the local district plan before issuing a Proposed Consistency Determination for public comment. After the public comment period, DGC may impose additional stipulations before issuing a Final Consistency Determination.

On September 4, 2001, DGC issued the final consistency determination affirming that the Deep Creek Project was consistent with the ACMP and the KPB district plan. DGC included several stipulations in the consistency determination that will minimize costs and reduce the potential impacts on the environment.

In response to State and federal concerns, Unocal moved the NNA #2 well location out of a wetland area. No part of the Deep Creek Project is on wetlands, and it avoids stream-crossings. Unocal will use existing roads to reach project locations. Any disturbed areas must be re-contoured and re-vegetated. Waste disposal will comply with the requirements of ADEC, the Alaska Oil and Gas Conservation Commission (AOGCC), and the federal Environmental Protection Agency (EPA).

The Director's approval of a unit agreement is an administrative action, which by itself does not convey any authority to conduct operations on unitized leases. Unitization and approval of a Unit Plan of Exploration does not authorize any physical activity, but the Division will review a proposed Unit Plan of Operations to ensure that it is consistent with the approved Unit Plan of Exploration or Development. The Initial POE requires the drilling of an exploratory well and

acquisition of seismic data within the unit area. The unit operator must obtain the Division's approval of a Unit Plan of Operations, which provides a more detailed plan for surface activities incident to exploration, and permits from state and federal agencies before proceeding with exploration of the unit area. The Deep Creek Project is consistent with the proposed Initial POE, and DNR accepts the plan approved under ACMP as the Unit Plan of Operations. Any new exploration or development activity that may occur following unitization, unless categorically approved under the ACMP ABC (General Concurrence) list, will be subject to an ACMP consistency determination, and must comply with state and local ordinances, including DNR Area Plans and the local district plan.

When reviewing a proposed Unit Plan of Operations, the Division considers the unit operator's ability to compensate the surface owner for damage sustained to the surface estate and plans for restoration and rehabilitation of the unit area. In addition, DNR, DEC, and AOGCC have bonding and financial responsibility requirements to ensure performance by the operator and reclamation of the area. 11 AAC 96.060; 18 AAC 75; 20 AAC 25.025. Unocal must clean up all well site locations in conformance with AOGCC regulation 11 AAC 25.170, and if operations are on State lands, to the satisfaction of the Commissioner as well.

Unitization allows the unit operator to explore and develop the resources under a single unit plan rather than on a lease-by-lease basis. Without unitization, the lease provisions would compel the lessees to seek permits to explore and develop each individual lease. The proliferation of surface activity and the duplication of production, gathering, and processing facilities would increase the potential for environmental damage. Unitization reduces both the number of facilities required to develop reserves and the aerial extent of land required to accommodate those facilities. Unitized exploration, development, and production minimize surface impacts by consolidating facilities, optimizing drilling operations, and reducing activity in the field.

The lessee's compliance with conservation orders and field pool rules issued by the AOGCC would mitigate some of the surface impacts without an agreement to unitize operations. Still, unitization is the most efficient method for maximizing oil and gas recovery, while minimizing negative impacts on other resources. After unitization, the unit operator can design and locate facilities to maximize recovery and to minimize environmental impacts, without regard to lease boundaries. Review and approval of exploration and development plans under a unit agreement will also ensure that the unit operator makes rational surface-use decisions without regard for individual lease ownership or expense.

The environmental impacts of exploring and developing the subject leases would be greater without unitization. If exploration is successful, the unit operator will consolidate facilities and space gas wells as close together as possible to minimize environmental impacts of development. Future exploration and development may also utilize existing logging roads. Additionally, Unocal expects to develop this proposed unit in concert with unitized exploration and development of other known and potential natural gas resources on the Kenai Peninsula via a common carrier pipeline, which will allow for further consolidation of facilities and pipelines. Consequently, the benefits of consolidated exploration and development, application of the State's areawide mitigation measures, and the use of existing roads, balance the potential costs to the surrounding environment.

Unitization minimizes the environmental impacts and costs of exploration and development of the unit area, which meets the section .303(b)(1) criteria and supports approval of the Application.

## 2. The Geological and Engineering Characteristics of the Reservoir

Unocal submitted the following technical data in support of the Application: a history of oil and gas exploration in the area, a stratigraphic column, Unocal's geological justification for the formation of the unit, annotated well logs, a two-well cross-section across the crest of the structure, representative strike and dip seismic cross sections across the Deep Creek anticline structure, and a structure-contour map on the top of the Tyonek Formation. Division staff evaluated the data provided by the unit operator, and otherwise available to them, and determined that the Deep Creek Unit area encompasses all or part of one or more potential hydrocarbon accumulations, fulfilling the regulatory requirement in 11 AAC 83.356(a).

Cook Inlet areawide geology maps from the 1960s and 1970s identify the anticlinal trend that is the basis of the proposed Deep Creek Unit. The Deep Creek anticline is the main feature in the proposed unit area, and a structural saddle separates it from the Happy Valley anticline. Additional structural highs are present in the proposed unit area further to the southwest, on the same trend as the Deep Creek and Happy Valley anticlines, but separated by a major saddle and faults perpendicular to the trend axis.

The Division cannot disclose the details of the confidential data in this Findings and Decision, but the well and geophysical data provided with the Application, and otherwise available to DNR, indicate that the potential for hydrocarbons within the proposed unit area is sufficient to qualify for unitization, and unitized development and production of any underlying gas reservoirs is appropriate.

The State's evaluation of the subsurface geology supports the formation of the Deep Creek Unit to include the lands described in Exhibit A and depicted in Exhibit B to the Agreement (Attachments 2 and 3 to this decision, respectively). The geological and engineering characteristics of the proposed unit area meet the Section .303(b)(2) criteria and support approval of the Application.

## 3. Prior Exploration Activities in the Unit Area

The oil and gas industry recognized the Deep Creek structure as a potential exploration target in the late 1950s, and mapped the subsurface with seismic, gravity, and magnetic tools that were available at the time. In 1958, Standard Oil of California (SOCAL) drilled the SOCAL Deep Creek 1 well (SDC 1), which was the first well drilled to test this anticlinal trend (see Table 1 below). The primary exploration objective of SDC 1 was oil in the Hemlock Formation, but gas in the Tyonek Formation was a secondary target. SOCAL initially drilled SDC 1 to a total depth of 14,221 feet. Subsequent to logging the initial borehole, hole problems forced the operator to re-drill the hole to a total depth of 12,253 feet before testing the Hemlock Formation. The operator attempted five drill stem tests (DSTs), two of which were successful in two separate intervals. DST #1 tested the Tyonek Formation over the interval from 10,254 feet through



10,291 feet measured depth (MD), and recovered 30 feet of water cut mud. DSTs #2, 3, and 4 all failed to test the Hemlock Formation between 12,162 feet and 12,203 feet MD. DST #5 tested the Hemlock Formation from 12,167 feet through 12,253 feet MD and recovered 1,624 feet of gassy mud and water. While there were minor indications of gas in SDC 1, SOCAL plugged and abandoned it as a dry hole.

In 1963, the State approved SOCAL's application to form the Happy Valley Unit, which encompassed most of the acreage included in the subject Application. Later that year, Superior Oil Company drilled the Happy Valley Unit #31-22 well (SHV 31-22) approximately one mile south of SDC 1, to a total depth of 13,550 feet MD. Superior did not perform any reservoir tests on SHV 31-22 before plugging and abandoning it as a dry hole.

Tyonek Formation gas accumulations are present in the Falls Creek and Ninilchik Units located north of the proposed Deep Creek Unit, and in the North Fork Unit to the south. In addition, the Cosmopolitan Unit, located southeast of the proposed Deep Creek Unit, has a proven oil accumulation. Despite the presence of these known gas and oil accumulations, none have proven to be commercial deposits.

Table 1. Wells Drilled on the Deep Creek/Happy Valley Anticlinal Trend					
Operator	Well Name & No.	Year Drilled	Status	Location	API Number
SOCAL	Deep Creek Unit #1	1958	P&A	15-T2S-R13W SM	501331000400
Superior	Happy Valley Unit #31-22	1963	P&A	22-T2S-R13W SM	502311000100

Technology (primarily drilling technology, well log analysis, and seismic acquisition and processing) has evolved greatly since these early wells were drilled on the southern Kenai Peninsula. Unocal is using this advanced technology in its Cook Inlet exploration. With new seismic data and improved well log analysis tools, Unocal believes it has a greater ability to identify and refine potential oil and gas exploration prospects within the Tyonek Formation.

In the past few years, Unocal applied current state-of-the-art seismic and well log interpretation techniques to re-examine the well and pre-1980 seismic data to evaluate the potential for natural gas in the area. No recent vintage seismic data has been acquired in this area.

Based on the history of the area and the data presented by Unocal, the area is prospective for commercial natural gas development, but that potential is unproven. This is especially true of the southwestern half of the proposed Deep Creek Unit. While Unocal justified the size of the Deep Creek Unit based on the technical data and the Initial POE, DNR will require additional exploration commitments to retain the State's southwestern acreage in the unit after the Initial POE expires.

The exploration data provided with the Application, and otherwise available to DNR, supports including the proposed acreage in the Deep Creek Unit. Therefore, the prior exploration activities fulfill the Section .303(b)(2) criteria and support approval of the Application.

#### 4. Plans for Exploration and Development of the Proposed Unit Area

The unit operator must provide plans for exploration or development that justify including the proposed acreage in the unit area. 11 AAC 83.306(1). A Unit Plan of Exploration must include a description of proposed exploration activities, including the bottom-hole locations and depths of proposed wells, and the estimated date drilling will commence. 11 AAC 83.341(a). The Initial POE contains a commitment to drill one new exploratory well in the first year. Unocal plans to drill the NNA #1 well to a total depth of 11,200' MD/TVD, at a location 510' FWL and 272' FSL of Section 11 in Township 2 South, Range 13 West, Seward Meridian, which lies within Tract 1 of the proposed Deep Creek Unit (CIRI lease C-061587).

Unocal's Deep Creek Project also included plans to drill a second well (NNA #2) within the proposed unit area, which is not a commitment in the Initial POE. Although NNA #2 is not identified in the Initial POE, the plan does state that "we currently envision drilling at least one more exploratory well on one of the other structures in the proposed unit area" in 2004-2005, after the expiration of the Initial POE. The State and federal agencies have approved the necessary permits, and if Unocal is successful drilling NNA #1, it is prepared to proceed with drilling a second well in the proposed unit area.

Unocal committed to "acquire new proprietary 2D and/or 3D seismic data within the proposed unit area to enable mapping of the adjacent structures" during the second year of the Initial POE. The Division believes the results from drilling the NNA #1 well on CIRI's acreage in the northeast corner of the proposed unit area, will provide little or no information relevant to the State's acreage in the southwestern unit area. Therefore, the Division is requiring that the seismic data Unocal acquires in the second year of the Initial POE must provide information relevant to the evaluation of the State's acreage in DCU Tracts 6 and 7. Unocal agreed to amend the Initial POE by adding this requirement as a condition for approval of the Application.

The Initial POE sets out a timely sequence of exploration activities that will facilitate the ultimate development and production of the reservoir, if Unocal discovers gas in commercial quantities. Furthermore, completion of the proposed exploration activities as scheduled will satisfy the performance standards and diligence requirements that the State, CIRI and Unocal agreed to as a condition for approval of the Agreement for the two-year initial term. The Division, CIRI, and Unocal agreed that a failure to timely perform the various components set out in the Initial POE would constitute a default under the Agreement.

A Unit Plan of Exploration must include plans to explore the entire unit area. Since there are several years remaining in the primary terms of the State leases designated as DCU Tract 6 and DCU Tract 7, the Division is willing to allow the Unit Operator time before exploring the southern portion of the unit area. However, the Division expects that in the next Deep Creek Unit Plan, Unocal will propose drilling a well to evaluate the natural gas prospects underlying DCU Tract 6 and DCU Tract 7. The Division cannot justify retaining acreage in the unit if the unit plan does not provide for exploration or development of the area. If the Division is not satisfied that the activities proposed in the next unit plan will adequately evaluate the State acreage within the unit, the Division may require that DCU Tracts 6 and 7 contract out of the unit area upon expiration of the two-year initial unit term.

The Initial POE protects the interests of the public, CIRI, and the State by committing the working interest owners to drill an exploratory well within the first year, and acquire additional seismic data to evaluate the adjacent structures within the unit area the following year. With the requirement that the new seismic data must evaluate the State's acreage in DCU Tracts 6 and 7, the Initial POE contains sufficient plans and commitments to explore the unit area and supports unitization. The Initial POE, with the agreed-to terms and conditions, ensures that the lease extensions resulting from unitization under 11 AAC 83.336 continue only so long as the applicants proceed diligently with exploration and development of the unit area. Therefore, the plans for exploration of the proposed unit area justify approval of the Application under the Section .303(b)(4) criteria.

## 5. The Economic Costs and Benefits to the State

Approval of the Agreement in combination with the Initial POE will result in both short-term and long-term economic benefits to the State. Assessment of the hydrocarbon potential within the unit will create jobs in the short-term. If the working interest owners make a commercial discovery, develop and begin production from the Deep Creek Unit, the State will earn royalty and tax revenues over the long-term life of the field.

The primary term of one State lease in the proposed unit area will expire on December 31, 2001, unless extended by unitization. If the lease expires, the leasehold interests will return to the State. Under the current Five-Year Oil and Gas Lease Sale Schedule, May 2002 is the earliest that DNR could reoffer the land. If DNR released the expired lands in 2002, the State could receive bonus payments and rentals for the primary term of the new lease. However, even if DNR released the acreage and the new lessee proposed exploration of the area during the seven-year term, it could be years before the State receives royalties and taxes on any commercial production. The potential long-term economic benefit of exploration and earlier development of the Deep Creek Unit area outweighs the short-term loss of potential bonus payments.

Unocal, Phillips (Alaska), Inc., and Marathon Oil Company (Marathon) all have interests in oil and gas leases in this region of the middle and southern Kenai Peninsula. Drilling is underway or planned at several locations along the Sterling Highway with the intent to prove up gas supply for future Cook Inlet demand. Marathon, the Ninilchik Unit operator, has begun drilling and testing the gas potential underlying that new unit, which the Director approved effective October 31, 2001. The Ninilchik Unit lies to the northwest of the proposed Deep Creek Unit, and surrounds the Falls Creek Unit, where gas reserves have been shut-in since their discovery in the early 1960s. The Division and CIRI are currently reviewing Unocal's application to form the South Ninilchik Unit, to explore natural gas prospects northeast of the proposed Deep Creek Unit. Unocal also applied for permits this year to drill another gas prospect near Anchor Point next year.

Unocal, Marathon, Enstar Natural Gas, and Homer Electric Association are engineering a pipeline that would connect these potential new sources of natural gas to the Enstar transmission system at the Kalifonsky Compressor Plant. They plan to deliver natural gas to communities along the highway including Homer, Deep Creek, Ninilchik, and Anchor Point to supply

residential and industrial needs in the Cook Inlet basin. The pipeline project is currently under ACMP review with an anticipated start-up date in early 2003.

The benefits of an increased property tax base for the Kenai Peninsula Borough and reduced energy costs for residents and businesses would be significant to these communities. Additional supply and deliverability of Cook Inlet gas to existing users may keep low regional energy prices stable. Deep Creek Unit development may increase and extend the State's income stream with new production taxes and royalties. Royalties and severance taxes benefit the local and state economy, and provide revenue to the State's general, school, and permanent funds. Unocal and CIRC may reinvest revenues in new exploration and development in the State or otherwise improve the quality of life in the region. Development of the Deep Creek Unit would also increase demand for goods and services supplied by local businesses, retailers, and service providers.

In summary, the economic benefits outweigh the costs of unitization. The working interest owners made meaningful commitments to explore the unit area, and if they are successful, the State will receive taxes, royalties, and increased economic activity. More over, the discovery of additional gas reserves in Cook Inlet may help to maintain stable, low cost energy supplies for the surrounding area. Therefore, DNR's evaluation of the Section .303(b)(5) economic criteria supports approval of the Application.

#### 6. Other Relevant Factors Necessary or Advisable to Protect the Public Interest

The State may take its royalty interest either in-value or in-kind. Under the state leases and Article 13 of the Agreement, the State's share of unitized substances attributable to royalty interests and any royalty payments due to the State must be paid free and clear of all lease, unit and participating area expenses. The Agreement and the leases describe the type of expenses contemplated and provide a partial list of excluded expenses. In addition, royalty interest unitized substances delivered to the State in-kind must be in good and merchantable condition and be of pipeline quality. The Division suggested modifying Article 13.4 and Article 13.6.3 of the Model Form by adding compression to the list of excluded expenses that the working interest owners cannot deduct from the State's royalty interest.

CIRC agreed to the proposed changes, and requested similar modifications to the provisions applicable to CIRC's royalty interest. However, Unocal was not willing to make the suggested changes to the proposed Agreement. Unocal claims that the requested amendments to the proposed Agreement "would modify the State lease terms which the Working Interest Owners are not prepared to do." The applicable State lease provisions are substantially the same as the unit provisions cited above.

It is the State's position that gas compression is one of the costs of preparing unitized substances for transportation off the unit area that the working interest owners incur before delivering the gas to a common carrier pipeline. In addition, gas compression may be necessary to deliver royalty in-kind gas in pipeline quality. Therefore, if Unocal successfully explores and develops unitized substances, whether the State takes its royalty interest in-value or in-kind, the State will consider gas compression an excluded expense under Article 13.4 and 13.6.3 of the Agreement.

Although Unocal did not agree to modify Article 13.4 and 13.6.3 of the Model Form, the State believes it has a sound basis for its interpretation of Agreement and lease provisions, and it is not a critical issue before the discovery and production of hydrocarbons in commercial quantities. This factor will maximize the economic benefit to the State from any production from the unit in a manner consistent with AS.38.05.180.

Another factor relevant to the Division's review of the Application is the proposed joint administration of the Agreement by the State and CIRC. Joint administration will be a greater administrative burden to the Division, which would weigh against approval of the Application. However, CIRC owns the majority of the acreage proposed for unitization, and the exploration activities in the Initial POE are concentrated on the CIRC acreage, therefore, it is reasonable that the State and CIRC share the responsibility for administration of the Agreement. State regulation 11 AAC 83.346(a) requires that a "unit plan of operations for all or part of the unit area must be approved by the Commissioner before any operations may be undertaken on or in the unit area." Article 8 of the Agreement amends this regulation such that the President has sole authority to approve operations that take place entirely on CIRC acreage. Joint administration of the Agreement provides for the protection of all parties of interest, including the State, and supports approval of the Application.

#### IV. FINDINGS

The Application, meets the criteria in 11 AAC 83.303(a) as discussed below.

##### 1. Promote the Conservation of All Natural Resources

The Agreement will promote the conservation of both surface and subsurface resources through unitized (rather than lease-by-lease) development. Unitization allows the unit operator to explore the area as if it were one lease. Without the Agreement, the lease contracts would compel the lessees to seek permits to drill wells on each individual lease. Unitization reduces both the number of facilities required to explore for and develop reserves and the aerial extent or the footprint required to accommodate those facilities.

After unitization, the unit operator can design and locate facilities to maximize recovery and minimize environmental impacts, without regard to lease ownership. Although Unocal has not determined the extent of any gas contained in the prospective reservoir, the Agreement will ensure that the lessees explore the acreage and maximize the recovery of reserves from the leases if they discover a commercial hydrocarbon accumulation.

The unitized exploration and development of the proposed unit area will reduce the amount of land, fish, and wildlife habitat that would otherwise be disrupted by individual lease development. The Application will conserve all natural resources, including hydrocarbons, gravel, sand, water, wetlands, and other valuable habitat. This reduction in environmental impacts and preservation of subsistence access is in the public interest.

If the exploration activities result in the discovery of a commercial reservoir, there will be environmental impacts associated with reservoir development. However, all unit development must proceed according to an approved Unit Plan of Development. Additionally, before undertaking any specific operations on State land, the Division must approve a Unit Plan of Operations. DNR may condition its approval of a Unit Plan of Operations and other permits on performance of the mitigation measures developed for the most recent Cook Inlet Areawide lease sale in addition to those in the leases. Compliance with mitigation measures will minimize, reduce or avoid adverse environmental impacts.

## 2. Promote the Prevention of Economic and Physical Waste

The unit will prevent economic and physical waste because there is a jointly approved exploration plan, and if Unocal makes a commercial discovery, the State and CIRC will evaluate and approve a comprehensive reservoir depletion plan. A cost-sharing agreement promotes efficient development of common surface facilities and operating strategies. With a cost-sharing agreement and reservoir model in place, the working interest owners in the unit can rationally decide well spacing requirements, injection plans, and the proper joint-use of surface facilities. Unitization prevents economic and physical waste by eliminating redundant expenditures for a given level of production, and by avoiding loss of ultimate recovery with the adoption of a unified reservoir management plan.

The concern of lessees competing for oil and gas is less evident in the proposed Deep Creek Unit where Unocal is the only lessee in the unit area. However, the fact that there are two royalty owners also weighs in favor of the formation of a unit. The CIRC leases have a higher royalty rate than the State leases, but CIRC would have more latitude to renegotiate economic terms and environmental provisions than the State. The State must ensure that the working interest owners do not concentrate exploration on the CIRC leases to the exclusion of the State acreage in the unit area. Formation of the Deep Creek Unit and approval of the Initial POE will ensure that Unocal prudently explores and develops all potential reservoirs within the unit area.

The total cost of exploring and developing the Deep Creek Unit leases would be higher on a lease-by-lease basis than it would be under unitization. Unitized operations improve development of reservoirs beneath leases that may have variable or unknown productivity. Marginally economic reserves, which otherwise would not be produced on a lease-by-lease basis, can be produced through unitized operations in combination with more productive leases. Facility consolidation lowers capital costs and promotes optimal reservoir management for all. Pressure maintenance and secondary recovery procedures are easier to design and achieve through joint, unitized efforts than would otherwise be possible. In combination, these factors allow the unit operator to develop and produce less profitable areas of a reservoir in the interest of all parties, including the State.

Unitization reduces the need for numerous exploration and development sites and thus minimizes drilling and facility investment costs. The unit operator can select locations for individual wells and surface facilities to optimize ultimate oil and gas recovery, while minimizing or avoiding adverse impacts to the environment.

Unitization allows pooling of capital so that the working interest owners can share the exploration and development risks. Reducing costs and environmental impact through unitized operations will expedite development of any reserves discovered and will promote greater ultimate recovery of oil and gas from the unit area. This may increase and extend the State's income stream from production taxes and royalties. The lessees may reinvest revenues in new exploration and development in the State. Unitization means lower financing costs and increased benefits to all interested parties. It benefits the local and state economy, and may provide production-based revenues to the State's general, school, and permanent funds.

### 3. Provide for the Protection of All Parties in Interest, Including the State

Unocal provided evidence of reasonable effort to obtain joinder of all proper parties to the Agreement, and the Division complied with the public notice requirements of 11 AAC 83.311.

Unocal holds sufficient interest in the unit area to give reasonably effective control of operations, The Agreement, with the Initial POE and the agreed-to terms and conditions outlined above, adequately and equitably protects the public interest, and promotes the State's interests because exploration will likely occur earlier than without unitization. Diligent exploration under a single approved unit plan without the complications of competing operators is in the State's best interest. It advances evaluation of the State's petroleum resources, while minimizing impacts to the region's cultural and environmental resources. A commercial discovery will stimulate the State's economy with production-based revenue, oil and gas related jobs, and service industry activity.

Formation of the Deep Creek Unit protects the economic interests of the working interest owners and royalty owners of a common reservoir. Operating under a unit agreement and unit operating agreement ensures that each working interest owner an equitable allocation of costs and revenues commensurate with the value of their leases.

The Agreement will not diminish access to public and navigable waters beyond those limitations (if any) imposed by law or already contained in the oil and gas leases covered by this Agreement. The Agreement provides for future expansions and contractions of the unit area, as warranted by data obtained by exploration or otherwise. The Agreement thereby protects the public interest, the rights of the parties, and the correlative rights of adjacent landowners.

Agreement provisions and State law provide for notice and an opportunity to be heard if the lessee disagrees with a State unit administration decision. In addition, the Division and CIRI plan to develop and implement procedures to follow if the lessors disagree on unit administration decisions. The parties to the Agreement will design these procedures to protect the working interest owners from conflicting unit decisions.

As discussed above, I find that the Agreement will promote the conservation of all natural resources, promote the prevention of economic and physical waste, and provide for the protection of all parties in interest including the State. The Application adequately and equitably protects the public interest, is in the State's best interest, and it meets the requirements of AS 38.05.180(p) and 11 AAC 83.303.

## V. DECISION

For the reasons discussed above, I hereby approve the Deep Creek Unit Application subject to the conditions specified herein. Unocal submitted a final version of the Agreement, approved by CIRI Vice-President, Kirk S. McGee, on December 21, 2001. The two-year term of the Agreement and the Initial POE become effective as of 12:01 a.m. on the day following approval by the Director.

Attachment 2 to this decision, Exhibit A to the Agreement, lists the leases and the legal description of the acreage committed to the Deep Creek Unit. Commitment of a portion of State Lease ADL 384380 as DCU Tract 2 constitutes a severance of the unitized and non-unitized portions of the lease. 11 AAC 83.373. The following describes the non-unitized portion of the severed lease:

T. 2 S., R. 13 W., Seward Meridian, Alaska

- Section 3: Surveyed, Lots 2, 3 and 4, S $\frac{1}{2}$ NE $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$ , 360.32 acres;
- Section 4: Surveyed, Lots 1 thru 4 inclusive, S $\frac{1}{2}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ , SW $\frac{1}{4}$ , S $\frac{1}{2}$ NW $\frac{1}{4}$ , 600.26 acres;
- Section 5: Surveyed, Fractional, Lots 1, 5 and 6, S $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , 489.84 acres;
- Section 6: Surveyed, Fractional, Lots 6, 7 and 8, SE $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ , 180.55 acres;
- Section 7: Surveyed, Lots 1 thru 4 inclusive, E $\frac{1}{2}$ E $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ , E $\frac{1}{2}$ W $\frac{1}{2}$ , 302.42 acres;
- Section 8: Surveyed, E $\frac{1}{2}$ , SW $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ , 620.00 acres;
- Section 9: Surveyed, NE $\frac{1}{4}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$ , 100.00 acres;
- Section 17: Surveyed, NE $\frac{1}{4}$ NE $\frac{1}{4}$ , 40.00 acres;

Alaska State Land Surveys,  
A.S.L.S. 72-40, Tract C, 5.00 acres;  
A.S.L.S. 72-81, Tract A, 5.00 acres;  
A.S.L.S. 73-54, 5.00 acres;  
A.S.L.S. 74-73, 4.83 acres;  
A.S.L.S. 78-168, 4.13 acres;

Meandered Lake, the unnamed lake located in the W $\frac{1}{2}$  of Section 5 and the E $\frac{1}{2}$  of Section 6, 35.21 acres.

This tract contains 2,752.56 acres, more or less.

When the primary term expires on December 31, 2001, absent unitization or drilling, the lease contract will terminate relative to the non-unitized acreage, and the lands described above will be available for the State to offer in the next Cook Inlet areawide oil and gas lease sale.



The unitized portion of ADL 384380, described in Attachment 2, contains 2,133.67 acres. Commitment to the Deep Creek Unit extends the primary term beyond its December 31, 2001 expiration date, and annual rental at the rate of \$3.00 per acre, or portion of an acre, will be due on January 1<sup>st</sup> each year. On December 12, 2001, Unocal paid annual rental for the lease year beginning January 1, 2002. The next rental payment of \$6,402.00, for the unitized acreage reminding in ADL 384380, will be due on January 1, 2003.

The unit operator shall revise the Initial POE to specify the required aerial extent of the proposed seismic program, and submit it to the Division within 30-days of this decision. The seismic data that Unocal acquires in the second year of the Initial POE must provide information relevant to the evaluation of the State's acreage in DCU Tract 6 and DCU Tract 7.

In accordance with Article 8.1.1 of the Agreement and State regulation 11 AAC 83.341, an annual status report is due on the first anniversary of the effective date of the Deep Creek Unit. The annual status report must describe the status of projects undertaken and the work completed during the first year of the Initial POE, as well as any proposed changes to the plan.

In addition, the unit operator must submit a second Plan of Exploration to the Commissioner and the President at least 60 days before the Initial POE expires. Alternatively, the unit operator shall request approval of the first Plan of Development, if appropriate, at least 90 days before the Initial POE expires. 11 AAC 83.341(b) and .343(c).

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of "issuance" of this decision, as defined in 11 AAC 02.040(c) and (d) and may be mailed or delivered to Pat Pourchot, Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; faxed to 1-907-269-8918, or sent by electronic mail to [dnr\\_appeals@dnr.state.ak.us](mailto:dnr_appeals@dnr.state.ak.us). This decision takes effect immediately. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

*Original Signed by Mark D. Myers, Director*

*on December 30, 2001*

\_\_\_\_\_  
Mark D. Myers, Director  
Division of Oil and Gas

\_\_\_\_\_  
Date

- Attachments:
1. The Deep Creek Unit Agreement
  2. Exhibit A, Tract Description and Ownership Schedule
  3. Exhibit B, Map of the Deep Creek Unit Boundary
  4. Cook Inlet Areawide 2001 Mitigation Measures

*Attachment 1: The Deep Creek Unit Agreement*

*Attachment 2: Exhibit A, Description of the Deep Creek Unit Area*

*Attachment 3: Exhibit B, Map of the Deep Creek Unit Area*

*Attachment 4: Cook Inlet 2001 Areawide Lease Sale Mitigation Measures*

# Deep Creek Unit

## Exhibit A

DIV. OF OIL & GAS

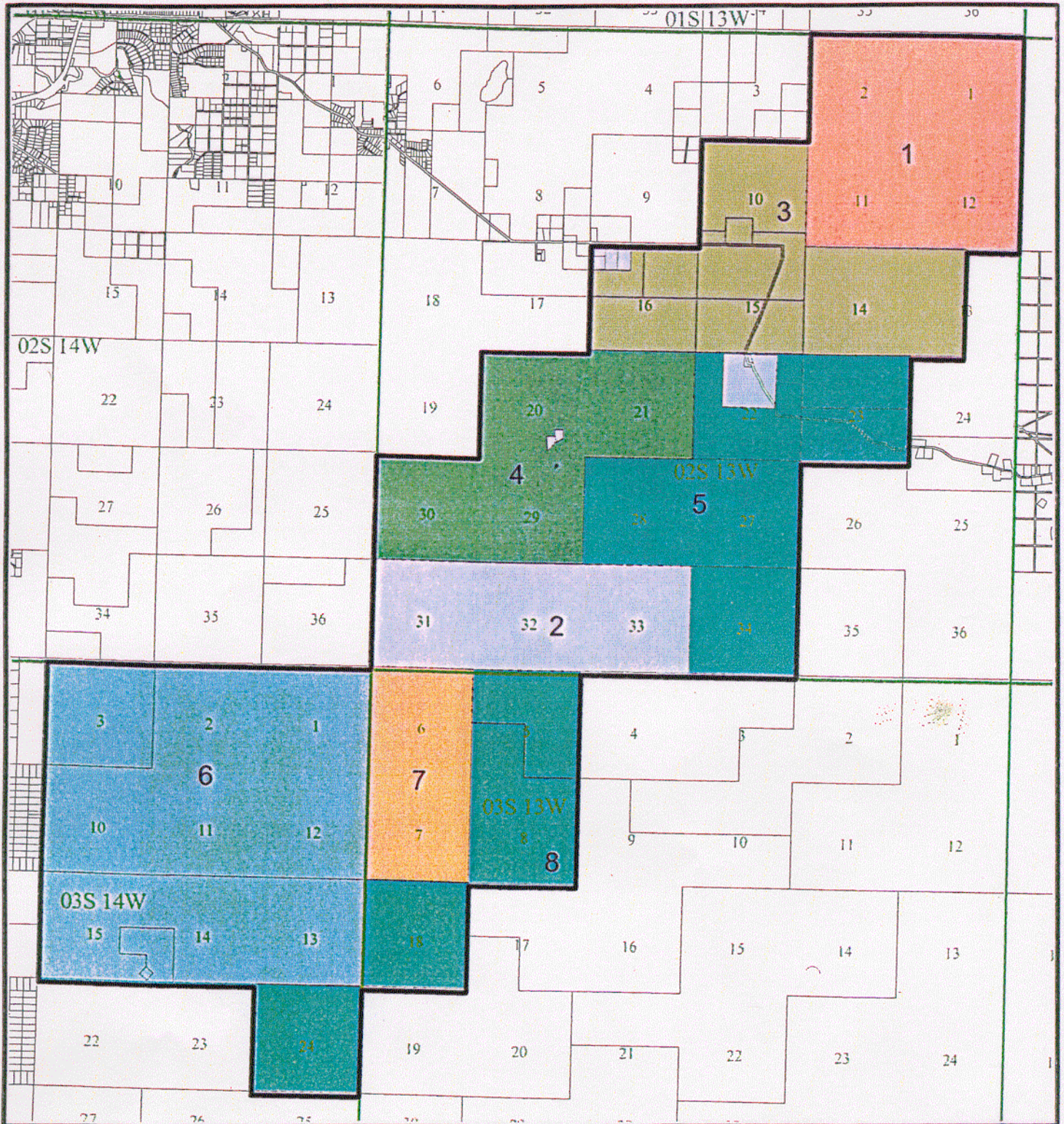
Tract	Tract Legal Description	Tract Acreage	Mineral Owner	Percent Ownership of Tract	Lease #	Expiration Date	Royalty	ORM Owner	ORRI Percent'	Working Interest Ownership	Working Interest Owner %
1	Township 2 South, Range 13 West, Seward Meridian  Sec. 1, All, 647.08 acres; Sec. 2, All, 642.88 acres; Sec. 11, All, 640 acres; Sec. 12, All, 640 acres.  and containing approximately 2,569.96 acres, more or less.	2569.96	Cook Inlet Region, Inc.	100.00%	UOC # 1029392 CIRI # C-061587	12/17/2003	0.18			Union Oil Company of California	100.00%
2	Tract 78-080 T.2 S., R. 13 W., Seward Meridian, Alaska  Section 16, Surveyed, W 1/2 NE 1/4 NW 1/4, NW 1/4 NW 1/4, 60 acres; Section 3 1, Surveyed. All, 623.72 acres; Section 32, Surveyed, All, 640 acres; Section 33, Surveyed, All, 640 acres;  U.S. Survey 9469, Lot 2, 159.96 acres; A.S.L.S. 80-72, Tracts A and B. 9.99 acres;  that portion of the lease inside the unit containing 2,133.67 acres, more or less.	2133.67	State of Alaska, Department of Natural Resources	100.00%	UOC # 1030902 ADL # 384380	12/31/2001	0.125	CIRI Production Company	3.50%	Union Oil Company of California	100.00%
3	Township 2 South, Range 13 West, Seward Meridian  Sec. 10, All, Excluding Lot I of USS 9469, 600.01 acres; Sec. 13, WY2, 320 acres; Sec. 14, All, 640 acres; Sec. 15, All, 640 acres; Sec. 16, NE1/4, E1/2NE1/4NWY4, S1/2NW1/4, S1/2, 580 acres;  and containing approximately 2,780.01 acres, more or less.	2780.01	Cook Inlet Region, Inc.	100.00%	UOC # 1029393 CIRI # C-061588	12/17/2003	0.18			Union Oil Company of California	100.00%
	Township 2 South, Range 13 West, Seward Meridian  Section 20: All, Excluding Tracts A and B of ASLS 80-72, 632.99 acres; Section 2 1: All, 640 acres; Section 29: All, 640 acres; Section 30: All, 621.44 acres,  and containing 2,534.43 acres more or less.	2534.43	Cook Inlet Region, Inc.	100.00%	UOC # 1029394 CIRI # C-061589	12/17/2003	0.18			Union Oil Company of California	100.00%

Tract	Tract Legal Description	Tract Acreage	Mineral Owner	Percent Ownership of Tract	Lease #	Expiration Date	Royalty	ORRI Owner	ORRI Percent	Working Interest Ownership	Working Interest Owner %
5	Township 2 South, Range 13 West, Seward Meridian  Section 22: All, Excluding Lot 2 of USS 9469, 480.04 acres; Section 23: All, 640 acres; Section 27: All, 640 acres; Section 28: All, 640 acres; Section 34: All, 640 acres;  and containing 3,040.04 acres more or less.	3040.04	Cook Inlet Region, Inc.	100.00%	UOC # 1029395 CIRI # C-061590	12/17/2003	0.18			Union Oil Company of California	100.00%
6	T.3 S., R. 14 W., Seward Meridian, Alaska  Section 1: Surveyed, All, 641.94 acres; Section 2: Surveyed, All, 640.70 acres; Section 3: Surveyed, All, 640.04 acres; Section 10: Surveyed, All, 640.0 acres; Section 11: Surveyed, All, 640.0 acres; Section 12: Surveyed, All, 640.0 acres; Section 15: Surveyed, All, 640.0 acres; Section 14: Surveyed, All, excluding U.S. Survey 4717, 637.26 acres; Section 15: Surveyed, All, excluding U.S. Survey 4717, 637.74 acres;  Special Survey 4717, 5.00 acres;  and containing approximately 5,762.68 acres, more or less.	5762.68	State of Alaska, Department of Natural Resources	100.00%	UOC # 1030906 ADL # 3 89226	1/31/2007	0.125			Union Oil Company of California	100.00%
7	T. 3 S., R. 13 W., Seward Meridian, Alaska  Section 6, Surveyed, All, 625.22 acres; Section 7, Surveyed, All, 624.90 acres;  containing approximately 1,250.12 acres, more or less.	1250-12	State of Alaska, Department of Natural Resources	100.00%	UOC # 1030905 ADL # 389225	1/31/2007	0.125			Union Oil Company of California	100.00%
8	Township 3 South, Range 13 West, Seward Meridian  Section 5: Lots 1 to 4 inclusive, S1/2 N1/2, SE1/4, SW1/4; Section 8: All; Section 18: All;  Township 3 South, Range 14 West, Seward Meridian  Section 24: All;  and containing approximately 2,546.00 acres more or less.	2546.00	Cook Inlet Region, Inc.	100.00%	UOC # 1029396 CIRI # C-061591	12/17/2003	0.18			Union Oil Company of California	100.00%

Tract	Tract Legal Description	Tract Acreage	Mineral Owner	Percent Ownership of Tract	Lease #	Expiration Date	Royalty	ORRI Owner	ORRI Percent	Working Interest Ownership	Working Interest Owner %
				Total Unit Acreage	Working Interest Owner	Net Acres	Unit %				
				22,616.91	Uncommitted	0.00	0.00%				
					Union Oil Company	22,616.91	100.00%				



# Deep Creek Unit Exhibit B



- Deep Creek Unit
- Township and Ranges
- Kenai Peninsula Borough Parcels

## Deep Creek Tracts

- |   |   |
|---|---|
| 1 | 5 |
| 2 | 6 |
| 3 | 7 |
| 4 | 8 |

**UNOCAL** 76

November 1, 2001



# Mitigation Measures and Lessee Advisories

## Mitigation Measures

AS 38.05.035(e) and the departmental delegation of authority provide the director, Division of Oil and Gas (DO&G), with the authority to impose conditions or limitations, in addition to those imposed by statute, to ensure that a resource disposal is in the state's best interests. Consequently, to mitigate the potential adverse social and environmental effects of specific selected lease related activities, DO&G has developed mitigation measures and will condition plans of operation, exploration, or development, and other permits based on these mitigation measures.

Under AS 38.05.035(e), ADNR has authority to apply the following mitigation measures developed for this Cook Inlet Areawide lease sale, to all oil and gas activities performed to access the state's leased mineral interest, regardless of the surface ownership status of the land from which the lessee seeks access.

Lessees must obtain approval of a detailed plan of operations from the Director before conducting exploratory or development activities (11 AAC 83.158). An approved plan of operations is the authorization by which DO&G regulates exploration, development, and production activities.

A plan of operations must identify the specific measures, design criteria, and construction methods and standards to be employed to comply with the restrictions listed below. It must also address any potential geophysical hazards that may exist at the site. Plans of operation must comply with coastal zone consistency review standards and procedures established under 6 AAC 50 and 80 including coastal district plans. Applications for required state or federal agency authorizations or permits must be submitted with the plan of operations. DO&G will require, as a condition of consistency approval, such modification or terms as may be necessary to ensure consistency with the ACMP standards.

These measures were developed after considering terms imposed in other Cook Inlet region oil and gas lease sales; fish and wildlife resource and harvest data submitted by ADF&G; environmental data relating to air and water quality, solid and liquid waste disposal, and oil spills submitted by ADEC; consensus items from the Cook Inlet Areawide stakeholders process, as well as comments submitted by the public, local governments, environmental organizations, and other federal, state, and local agencies. Additional project-specific mitigation measures are imposed if and when oil and gas lessees submit proposed plans of exploration, operation, or development.

In addition to compliance with these mitigation measures, lessees must comply with all applicable local, state and federal codes, statutes and regulations, and any subsequent amendments. Lessees must also comply with all current or future ADNR area plans and recreation rivers plans; and ADF&G game refuge plans, critical habitat area plans, and sanctuary area plans within which a leased area is located. Federal, state and local government powers to regulate the oil and gas industry are discussed in the "Governmental powers to Regulate Oil and Gas Exploration, Development, Production, and Transportation" Chapter Eight of this finding. In addition, Appendix B lists federal and state statutes and regulations that apply to lease activities.

Information to lessees relevant to the lease sale is also presented in the "Lessee Advisories," section B, which contain precautions which may apply to post-lease sale activities, and reflect existing local, state, and federal law or policy at the time of the sale.

Hereafter, wherever abbreviations are used they mean: Alaska Coastal Management Program (ACMP), Alaska Department of Environmental Conservation (ADEC), Alaska Department of Fish and Game (ADF&G), Alaska Department of Natural Resources (ADNR), Alaska Oil and Gas Conservation Commission (AOGCC), Areas Meriting Special Attention (AMSA), Director (Director, Division of Oil and Gas), Division of Forestry (DOF), Division of Mining, Land and Water (DMLW), Division of Oil and Gas (DO&G), Division of Parks and Outdoor Recreation (DPOR), Kenai Peninsula Borough (KPB), Municipality of Anchorage (MOA), Matanuska-Susitna Borough (MSB), State Historic Preservation Officer (SHPO), and U.S. Fish and Wildlife Service (USF&WS).

Lessees are advised that portions of the sale area may be subject to special area permits by ADF&G to protect areas designated by the legislature as state game refuges in AS 16.20.010 -AS 16.20.080.

For those mitigation measures and lessee advisories that are within ADNR's authority, the Lessee may request, and the Director of DO&G may grant, exceptions if compliance with the mitigation measure is not feasible or prudent, or an equal or better alternative is offered. Requests and justifications for exceptions must be included in the initial Plan of Operations when one is required. The decision whether to grant an exception will be based on review of the Plan of Operations by the public and in consultation with appropriate state resource agencies. Mitigation measures subject to exceptions are noted with an asterisk (\*), followed by the initials of the agency that must be consulted in any decision to grant an exception. Critical habitat areas and state game refuges are jointly managed by ADNR and ADF&G; exceptions to mitigation measures in these areas must be agreed to by both agencies. Agency abbreviations are: ADF&G (Alaska Department of Fish and Game), ADEC (Alaska Department of Environmental Conservation), DL (Division of Lands) and DOF (Division of Forestry).

Except as indicated, the restrictions listed below do not apply to geophysical activity on state land; geophysical exploration is governed by 11 AAC 96.

The following mitigation measures and advisories will be imposed on oil and gas activities in or on all Cook Inlet Areawide leased lands and waterbodies as a condition of the approval of plans of operation. If units are formed with leases issued under different mitigation measures, the most recent measures will most likely be applied to the whole unit.

## General

1. Oil and hazardous substance pollution control: In addition to addressing the prevention, detection, and cleanup of releases of oil, contingency plans (C-Plans) for oil and gas extraction operations should include, but not be limited to, methods for detecting, responding to, and controlling blowouts; the location and identification of oil spill cleanup equipment; the location and availability of suitable alternative drilling equipment; and a plan of operations to mobilize and drill a relief well.
2. Use of explosives will be prohibited in open water areas of fishbearing streams and lakes. Explosives must not be detonated beneath, or in close proximity to fishbearing streams and lakes if the detonation of the explosive produces a pressure rise in the waterbody greater than 2.5 pounds per square inch (psi) unless the waterbody, including its substrate, is solidly frozen.



Explosives must not produce a peak particle velocity greater than 0.5 inches per second (ips) in a spawning bed during the early stages of egg incubation. The minimum acceptable offset from fishbearing streams and lakes for various size buried charges is:

Charge Weight	Distance from Stream
1 pound charge	37 feet (11.2 m)
2 pound charge	52 feet (15.8 m)
5 pound charge	82 feet (25.0 m)
10 pound charge	116 feet (35.4 m)
25 pound charge	184 feet (50.1 m)
100 pound charge	368 feet (112.2 m)

There are numerous fishbearing streams and lakes within the sale area. Specific information on the location of these waterbodies may be obtained by contacting ADF&G.

- 3.\* Onshore exploration activities must be supported by air service, an existing road system or port facility, ice roads, or by vehicles which do not cause significant damage to the ground surface or vegetation. Unrestricted surface travel may be permitted by the directors of DO&G and DL, if an emergency condition exists.

Construction of temporary roads may be allowed. Temporary means that a road must be removed to the extent that it is rendered impassable or is otherwise rehabilitated in a manner such that any placed gravel remaining approximates surrounding natural features. Construction of permanent roads will be prohibited during the exploration phase. \*Exception - DL.

4. a. Removal of water from fishbearing rivers, streams, and natural lakes shall be subject to prior written approval by DMWM and ADF&G.
- b. Compaction or removal of snow cover overlying fishbearing waterbodies will be prohibited except for approved crossings. If ice thickness is not sufficient to facilitate a crossing, ice and/or snow bridges may be required.
5. Water intake pipes used to remove water from fishbearing waterbodies must be surrounded by a screened enclosure to prevent fish entrainment and impingement. Screen mesh size shall not exceed 0.04 inches unless another size has been approved by ADF&G. The maximum water velocity at the surface of the screen enclosure may be no greater than 0.1 foot per second.

## Facilities and Structures

6. a. The siting of onshore facilities, other than docks, or road and pipeline crossings, will be prohibited within 500 feet of all fishbearing streams and lakes. Additionally, siting of facilities will be prohibited within one-half mile of the banks of Harriet, Alexander, Lake, Deep and Stariski creeks, and the Drift, Big, Kustatan, McArthur, Chuitna, Theodore, Beluga, Susitna, Little Susitna, Kenai, Kasilof, Ninilchik and Anchor rivers. New facilities may be sited within the one-half mile buffer if the lessee demonstrates that the alternate location is environmentally preferable, but in no instance will a facility be located within one-quarter mile of the river bank. ADF&G concurrence will be required for siting within the one-half mile buffer. Road and pipeline crossings must be aligned perpendicular or near perpendicular to watercourses.

- b. Lessees will minimize sight and sound impacts for new facilities sited less than one-half mile from river banks and in areas of high recreational use by (1) providing natural buffers and screening to conceal facilities; (2) conducting exploration operations between October 1 and April 30; and (3) using alternative techniques to minimize impacts.
  - c. Surface entry will be prohibited in parcels that are within the Kenai River Special Management Area (KRSMA).
  - d. Surface entry will be prohibited on state lands within the Kenai National Wildlife Refuge. This term does not limit surface entry on other private lands within the refuge.
  - e. Lessees are prohibited from placing drilling rigs and lease-related facilities and structures within an area near the Kenai River composed of: all land within Section 36 in T6N, R11W that is located south of a line drawn from the protracted NE corner to the protracted SW corner of the section; all land within the western half of Section 31 in T6N, R10W and Section 6 in T5N, R10W; and all land within Section 1 in T5N, R11W.
  - f. A fresh water aquifer monitoring well with quarterly water quality monitoring should be required down gradient of a permanent storage facility unless alternative acceptable technology is approved by ADEC.
7. The siting of new facilities in key wetlands and sensitive habitat areas should be limited to the extent possible. If facilities are to be located within these areas, the lessee should demonstrate to the satisfaction of the Director and ADF&G that impacts are minimized through appropriate mitigation measures.
- 8.\* Measures will be required by the Director, after consultation with ADF&G and ADEC, to minimize the impact of industrial development on key wetlands. Key wetlands are those wetlands that are important to fish, waterfowl, and shorebirds because of their high value or scarcity in the region or that have been determined to function at a high level using the hydrogeomorphic approach. Lessees must identify on a map or aerial photograph the largest surface area, including reasonably foreseeable future expansion areas, within which a facility is to be sited, or an activity will occur. The map or photograph must accompany the plan of operations. DO&G will consult with ADF&G and ADEC to identify the least sensitive areas within the area of interest. To minimize impacts, the lessee must avoid siting facilities in the identified sensitive habitat areas. \*Exception - ADF&G, ADEC.
- 9.\* Impermeable lining and diking, or equivalent measures such as double-walled tanks, will be required for onshore oil storage facilities (with a total above ground storage capacity greater than 1,320 gallons, provided no single tank capacity exceeds 660 gal) and for sewage ponds. Additional site-specific measures may be required as determined by ADNRR, with the concurrence of ADEC, and will be addressed in the existing review of project permits or oil spill contingency plans (C-Plans).
- Buffer zones of not less than 500 feet will be required to separate onshore oil storage facilities and sewage ponds from marine waters and freshwater supplies, streams and lakes, and key wetlands. Sumps and reserve pits must be impermeable and otherwise fully contained through diking or other means. \*Exception - ADF&G, ADEC.
- 10.\* With the exception of drill pads, airstrips, and roads permitted under Term 3, exploration facilities must be consolidated, temporary, and must not be constructed of gravel. Use of abandoned gravel structures may be permitted on an individual basis. \*Exception - ADF&G, DL.

11.
  - a. Wherever possible, onshore pipelines must utilize existing transportation corridors and be buried where soil and geophysical conditions permit. In areas where pipelines must be placed above ground, pipelines must be sited, designed and constructed to allow free movement of moose and caribou.
  - b. Offshore pipelines must be located and constructed to prevent obstructions to marine navigation and fishing operations.
  - c. Pipelines must be located upslope of roadways and construction pads and must be designed to facilitate the containment and cleanup of spilled hydrocarbons. Pipelines, flowlines, and gathering lines must be designed and constructed to assure integrity against climatic conditions, tides and currents, and other geophysical hazards.

## Local Hire

12. To the extent they are available and qualified, the lessee is encouraged to employ local and Alaska residents and contractors for work performed on the leased area. Lessees shall submit, as part of the plan of operations, a proposal detailing the means by which the lessee will comply with the measure. The proposal must include a description of the operator's plans for partnering with local communities to recruit and hire local and Alaska residents and contractors. The lessee is encouraged, in formulating this proposal, to coordinate with employment services offered by the state of Alaska and local communities and to recruit employees from local communities.

## Training

13. Lessee must include in any plan of exploration or plan of development, a training program for all personnel, including contractors and subcontractors, involved in any activity. The program must be designed to inform each person working on the project of environmental, social, and cultural concerns which relate to the individual's job.

The program must employ effective methods to ensure that personnel understand and use techniques necessary to preserve geological, archeological, and biological resources. In addition, the program must be designed to help personnel increase their sensitivity and understanding of community values, customs, and lifestyles in areas where they will be operating.

## Access

14.
  - a. Public access to, or use of, the leased area may not be restricted except within 1,500 feet (457 m) or less of onshore drill sites, buildings, and other related structures. Areas of restricted access must be identified in the plan of operations.
  - b. No lease facilities or operations may be located so as to block access to or along navigable and public waters as defined at AS 38.05.965(13) and (17).
15. Lease-related use will be restricted when the commissioner determines it is necessary to prevent unreasonable conflicts with local subsistence harvests and commercial fishing operations. In enforcing this term the division, during review of plans of operation or development, will work with other agencies and the public to assure that potential conflicts are identified and avoided. In order to avoid

conflicts with fishing activities, restrictions may include alternative site selection, requiring directional drilling, seasonal drilling restrictions, subsea completion techniques, and other technologies deemed appropriate by the commissioner.

## Prehistoric, Historic, and Archeological Sites

16.
  - a. Prior to the construction or placement of any structure, road, or facility resulting from exploration, development, or production activities, the lessee must conduct an inventory of prehistoric, historic, and archeological sites within the area affected by an activity. The inventory must include consideration of literature provided by the KPB, MOA, MSB and local residents; documentation of oral history regarding prehistoric and historic uses of such sites; evidence of consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places; and site surveys. The inventory must also include a detailed analysis of the effects that might result from the activity.
  - b. The inventory must be submitted to the Director for distribution to DPOR for review and comment. In the event that a prehistoric, historic, or archeological site or area may be adversely affected by a leasehold activity, the Director, after consultation with DPOR and the KPB, MOA or MSB, will direct the lessee as to what course of action will be necessary to avoid or minimize the adverse effect.
  - c. Discovery of prehistoric, historic, or archaeological objects: In the event any site, structure, or object of prehistoric, historic, or archaeological significance is discovered during leasehold operations, the lessee must immediately report such findings to the Director. The lessee must make every reasonable effort to preserve and protect such site, structure, or object from damage until the Director, after consultation with the SHPO, has given directions as to its preservation.

## Fishbearing Streams

17. Under Title 16 of the Alaska Statutes, the measures listed below will be imposed by ADF&G below the ordinary high water mark to protect designated anadromous fish-bearing streams. Similar provisions will be imposed by the Director to protect non-anadromous fishbearing streams. Specific information on the location of anadromous waterbodies in and near the area may be obtained from ADF&G.
  - a. Alteration of river banks will be prohibited.
  - b. Operation of equipment within riparian habitats will be prohibited.
  - c. The operation of equipment, excluding boats, in open water areas of rivers and streams will be prohibited.
  - d. Bridges or non-bottom founded structures will be required for crossing fish spawning and important rearing habitats. In areas where culverts are used, they must be designed, installed, and maintained to provide efficient passage of fish.

## Waste Disposal

18. Solid waste disposal:

- a. Solid waste generated from the development and/or operation of the lease areas shall be reduced, reused, or recycled to the maximum extent practicable. Garbage and domestic combustible refuse must be incinerated where appropriate. Remaining solid waste shall be taken to an approved disposal site, in accordance with 18 AAC 60.

New solid waste disposal sites will not be approved or located on state property during the exploratory phase. Exceptions may be provided for drilling waste if the facility will comply with the applicable provisions of 18 AAC 60.

- b. The preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection. Injection of non-hazardous oilfield wastes generated during development is regulated by AOGCC through its Underground Injection Control (UIC) Program for oil and gas wells.
- c. Discharge of drilling muds and cuttings into lakes, streams, rivers, and high value wetlands is prohibited. Surface discharge of drilling muds and cuttings into reserve pits shall be allowed only when it is determined that underground injection is not technically achievable. A solid waste disposal permit must be obtained from ADEC. If use of a reserve pit is proposed, the operator must demonstrate the advantages of a reserve pit over other disposal methods, and describe methods to be employed to reduce the disposed volume. Onpad temporary cuttings storage will be allowed as necessary to facilitate annular injection and/or backhaul operations in accordance with ADEC solid waste regulations 18 AAC 60.

19. Wastewater disposal:

- a. Unless authorized by NPDES and/or state permit, disposal of wastewater into freshwater bodies, intertidal areas, or estuarine waters is prohibited.
- b. Disposal of produced waters to freshwater bodies, intertidal areas, and estuarine waters is prohibited.
- c. Disposal of produced waters in upland areas, including wetlands, will be by subsurface disposal techniques.
- d. Surface discharge of reserve pit fluids will be prohibited unless authorized in a permit issued by AOGCC and approved by DL.

## Gravel Mining

20. Gravel mining within an active floodplain will be prohibited. Upland sites will be restricted to the minimum necessary to develop the field in an efficient manner.

## Special Areas

21. Management of legislatively designated state game refuges and critical habitat areas is the co-responsibility of ADF&G (AS 16.20.050-060) and ADNR (AS 38.05.027). For activities occurring within a refuge or critical habitat area, the lessee will be required to obtain permits from both ADNR and ADF&G.

Five state game refuges (SGR) and four critical habitat areas (CHA) are located within or partially within the sale area: The Goose Bay SGR, Palmer Hay Flats SGR, Anchorage Coastal Wildlife Refuge, Susitna Flats SGR, Trading Bay SGR, Redoubt Bay CHA, Kalgin Island CHA, Clam Gulch CHA, and Anchor River and Fritz Creek CHA.

Operations within these refuges must comply with the terms and conditions of the sale, the regulations contained in 5 AAC 95, and the requirements applicable to special area management plans. Where the requirements of this term are more restrictive than the requirements of other Sale 85 terms, the provisions of this term prevail.

- a. Surface entry for drilling and above ground lease-related facilities and structures will be prohibited within the Palmer Hay Flats SGR, Anchorage Coastal Wildlife Refuge, Clam Gulch CHA, Anchor River and Fritz Creek CHA, within the core Tule goose and trumpeter swan nesting and molting corridors along the Big, Kustatan, and McArthur rivers in the Trading Bay SGR and Redoubt Bay CHA, on tidelands and wetlands in the Goose Bay SGR and Kalgin Island CHA and within the primary shorebird area in Susitna Flats SGR, Trading Bay SGR, and Redoubt Bay CHA. Surface entry may be allowed on uplands within the Goose Bay SGR and Kalgin Island CHA; and surface entry for seismic surveys and similar temporary activities may be allowed in all of these areas, consistent with the Special Area regulations and applicable Special Area management plans. Directional drilling from adjacent sites may be allowed. Similar provisions will be imposed by the Director to protect primary shorebird habitat in Redoubt Bay south of the CHA.
- b. Exploration, development, and major maintenance within important Tule goose and trumpeter swan habitat in Trading Bay SGR, the Redoubt Bay CHA, and the Susitna Flats SGR, and the primary waterfowl area above mean high tide within the Susitna Flats SGR and Trading Bay SGR will be allowed only between November 1 and March 31, unless an extension is approved by ADF&G and DO&G. Routine maintenance and emergency repairs will be permitted on a year-round basis during the production phase. A detailed plan describing routine maintenance activities to be conducted between April 1 and October 31 must be submitted to ADF&G and DO&G for review and approval.
- c. Gravel pads and wellheads are the only above ground structures that will be allowed within the primary waterfowl area above mean high tide in the Susitna Flats SGR and the Trading Bay SGR and important Tule goose and trumpeter swan habitat in the Trading Bay SGR, Redoubt Bay CHA and Susitna Flats SGR.

Construction activities within a refuge must utilize the best available technology to minimize the visual, biological, and physical impacts of these structures and must be approved in writing by ADF&G and the Director.

- d. Surface discharge of produced waters will be prohibited.
- e. Disposal of drilling muds and cuttings will be allowed only at upland sites approved by the Director and ADF&G, after consultation with DL and ADEC.

- f. Facilities must be designed and constructed to prevent the spill and spread of hydrocarbons and to facilitate cleanup efforts.
  - g. Facilities must be designed to minimize the possibility of spills or fires resulting from vandalism or hunting accidents.
  - h. Upon abandonment or expiration of a lease, all facilities must be removed and the sites rehabilitated to the satisfaction of ADF&G and the Director. The departments may determine that it is in the best interest of the public to retain some or all of the facilities. Rehabilitation requirements will be identified in a Habitat Special Area Permit (AS 16.20.060 and/or AS 16.20.530).
  - i. Gravel roads will not be allowed during exploration unless an exception is granted as provided above.
  - j. Public access to, or use of, the leased area may not be restricted except within the immediate vicinity of onshore drill sites, buildings, and other related structures. Areas of restricted access must be identified in the plan of operations. No lease facilities or operations may be located so as to block access to or along navigable and public waters as defined at AS 38.05.965(13) and (17).
22. Surface entry into the critical waterfowl habitat along the Kasilof River is prohibited. Directional drilling from adjacent sites may be allowed.
- 23.\* Surface entry will be prohibited within one-quarter mile of trumpeter swan nesting sites between April 1 through August 31. The siting of permanent facilities, including roads, material sites, storage areas, powerlines, and above-ground pipelines will be prohibited within one-quarter mile of known nesting sites. Trumpeter swan nesting sites will be identified by ADF&G at the request of the lessee.  
\*Exception - ADF&G.
24. If the lessee discovers a previously unreported active or inactive bald eagle nest site, the lessee must immediately report the nest location to the Director. Lessees are advised that oil and gas activities likely to disturb nesting eagles are subject to the provisions of the Bald Eagle Act of 1940, as amended.
- Permanent facilities may be prohibited within one-quarter mile and will be prohibited within 500 feet of nests, active or inactive. Surface entry, fixed wing aircraft flights below 500 vertical feet, and helicopter flights below 1,500 vertical feet will be prohibited within 500 feet of active nests between April 1 and August 31. Human safety shall take precedence over this provision.
- Temporary activities within 500 feet of nesting sites may be allowed between September 1 and March 31 if they will not alter bald eagle habitat.
- Maps identifying documented nest sites will be made available by ADF&G, upon request.
25. The following measures will be required to minimize impacts on Kenai Lowlands Caribou Herd:
- a. Surface entry within the core caribou calving area is prohibited, except that surface entry for seismic exploration will be allowed from October 16 to March 31.

\*b. Exploration and development activities will be restricted or prohibited between April 1 and October 15 within the core caribou summer habitat, except that maintenance and operation of production wells will be allowed year-round. Permanent roads, or facilities other than production wells, will also be restricted or prohibited within this area. Facilities within the core caribou summer habitat that required year-round access must be located in forested areas, where practical.

\*Exception - ADF&G

\*c. Pipelines must be buried within the core caribou summer habitat. \*Exception - ADF&G.

26. For projects in close proximity to areas frequented by bears, lessees are encouraged to prepare and implement bear interaction plans to minimize conflicts between bears and humans. These plans could include measures to: (a) minimize attraction of bears to drill sites; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on drill sites and the proper procedures to take; (d) if authorized, deter bears from the drill site; (e) provide contingencies in the event bears do not leave the site; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on site and in the immediate area.
27. Prior to commencement of any activities, lessees shall confirm the locations of den sites that are actually occupied in the season of the proposed work with the Division of Wildlife Conservation, DF&G, based on data provided by DF&G. Exploration and development activities, begun between November 15 and March 31, will not be conducted within one-half mile of occupied brown bear dens, unless alternative mitigation measures are approved by DF&G. Occupied dens not previously identified by DF&G that are encountered in the field must be reported to the Division of Wildlife Conservation, DF&G, within 24 hours. Mobile activities shall avoid such dens by one-half mile unless alternative mitigation measures are approved by DO&G with concurrence from DF&G. Non-mobile facilities will not be required to be relocated.
28. To avoid possible adverse impacts to Kenai Peninsula brown bears, exploration activities will be allowed only between November 15 and March 31 within the brown bear movement corridors around Skilak Lake, Tustumena Lake, along the upper Anchor River drainage, and at the head of Kachemak Bay.
29. Lessees must disclose any requests for exceptions to these mitigation measures and advisories in their plans of operation and applicable permit applications.
30. Plans of operation submitted for review and approval must describe the lessee's efforts to communicate with local communities, and interested local community groups, if any, in the development of such plans.
31. Lessees must submit a plan of operations to the state for approval as required by 11 AAC 83.158. Where surface activities are proposed on non state-owned land, lessees must submit a copy of the plan of operations to the private surface owner. Plans of operation must describe the lessee's efforts to minimize impacts on residential areas and privately-owned surface lands.



## Lessee Advisories

1. The use of explosives for seismic activities with a velocity of greater than 3,000 feet per second in marine waters is prohibited.
2. Lessees must include in their seismic permit applications a plan for notifying the public of their activities.
3. Forest clearing for seismic activity must be approved by the Director, after consultation with DOF and ADF&G.
4.
  - a. Aircraft flying over the primary shorebird habitat within the Susitna Flats SGR, Trading Bay SGR, and Redoubt Bay CHA must maintain a minimum altitude of 1,500 feet above ground level or a horizontal distance of one mile.
  - b. Aircraft flying over the Goose Bay SGR and the Palmer Hay Flats SGR, the primary waterfowl habitat above mean high tide within the Susitna Flats SGR and Trading Bay SGR, and the core Tule goose and trumpeter swan molting and nesting corridors in Trading Bay SGR and Redoubt Bay CHA must maintain a minimum altitude of 1,500 feet above ground level or a horizontal distance of one mile from April 1 to October 31. Human safety will take precedence over this provision.
5.
  - a. Because of the state's interest in encouraging clean air, lessees are encouraged to adopt conservation measures to reduce hydrocarbon emissions.
  - b. The state recognizes that in the long run sources of energy other than oil and gas will be needed. Lessee participation in conducting research on alternative energy sources is appreciated.
6. In populated areas where there is no local planning and zoning, ADNR may require in approval of plans of operation that permanent structures be designed to be compatible with the aesthetics of the surrounding area.
7. To ensure sufficient vegetative cover in Kenai Peninsula brown bear feeding concentration areas, lessees may be required to locate exploration and development facilities beyond the 500 foot buffer along anadromous fish bearing streams. This requirement will be considered during review of site-specific plans of operations, in consultation with DF&G.
8. If data indicate that brown bear movement will be hindered by development and production activities, lessees may be required to locate facilities outside of the Kenai Peninsula brown bear movement corridors around Skilak Lake, Tustumena Lake, along the upper Anchor River drainage, and at the head of Kachemak Bay. This requirement will be considered during review of site-specific plans of operations, in consultation with DF&G.